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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/553,058 | 04/06/2007 | Lucile Gambut-Garel | 1022702-000136 | 4269 |
| 21839 7590 08/17/2010 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404 | | | EXAMINER SCULLY, STEVEN M | |
| | | | ART UNIT 1795 | PAPER NUMBER |
| | | | NOTIFICATION DATE 08/17/2010 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com
offserv@bipc.com

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/553,058 | GAMBUT-GAREL ET AL. | |
| | Examiner | Art Unit | |
| | Steven Scully | 1795 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04/06/2007 and 06/25/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/12/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

CROSSLINKABLE COMPOSITION FOR A BATTERY ELECTROLYTE

Examiner: Scully S.N.: 10/553,058 Art Unit: 1795

DETAILED ACTION

Specification

1. The Preliminary Amendment dated April 10, 2007 has been considered and does not introduce new matter.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on October 12, 2005 has been considered by the examiner. The International Search Report filed October 12, 2005 has also been considered.

Claim Objections

4. Claim 4 is objected to because of the following informalities: "polyfunctinoal" in line 4 should read "polyfunctional". Appropriate correction is required.

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Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US2002/0051911).

With respect to claim 1, Okada discloses a curable composition for a polymer electrolyte which comprises constituents (A) to (D) as an essential constituent, wherein (A) is a polysiloxane having a polyethylene oxide (polyoxyalkylene ether) structure-containing group on a silicon atom and having two or more SiH groups, (B) is a compound having at least one structure selected from a siloxy linkage and having two or more alkenyl groups, (C) is a hydrosilylation catalyst, and (D) is an electrolyte salt compound. See abstract. A specific example of the constituent (B) is 1,3-divinyl-1,1,3,3-tetramethyldisiloxane, which is considered a polyorganosiloxane. See [0054].

Okada does not expressly disclose the SiH groups on the **(B)** compound or the alkenyl groups on the **(A)** compound as claimed (instead disclosing the opposite). However, the purpose of the SiH and alkenyl groups is to cross-link the polymers. Therefore, one of ordinary skill in the art at the time of the invention would recognize that the SiH groups of constituent (A) and the alkenyl groups of constituent (B) are substitutable for each other and would yield the predictable results of cross-linkable polymers that would, upon cross-linking, yield the same polymer. *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007).

With respect to claim 2, Okada molar ratio of constituent (A) to (B) of 0.05 to 3.0. See [0068]. Thus, the ratio of hydrogen atoms bonded to silicon to the number of alkenyl radicals would fall within the claimed range. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to claim 3, the polyoxyalkylene ether of the constituent (A) is, for example, a polyoxypropylene ether. See [0026-0027].

With respect to claims 4 and 5, Okada discloses the constituent (A) to have at least m repeat units, wherein m is greater than 1, of a polyethylene oxide structure-containing group. R is shown to be a methyl group, Thus $a=1$. No X is present, $c=0$. the Y group is the polyoxyalkylene ether shown in the structural formula of paragraph [0026]. See [0026-0027]. In this case, the number of oxygens, $(4-(a+b+c))/2$, is equal to one. Okada discloses the Y group comprises R^1 which is $(CH_2)_3$. Specifically, the polyoxyalkylene ether is $(CH_2)_3(OCH_2CCH_2)_pOCH_3$. It is noted that the p group is an oxyethylene group (i.e. two carbons), which indicates that the additional "C" is a typographical error. This is further evidenced by the surrounding $O-CH_2-C-CH_2-O$ which is not chemically possible. It is the position of the Examiner that one of ordinary skill would recognize Okada intended the formula to be $(CH_2)_3(OCH_2CH_2)_pOCH_3$ which is chemically possible. In this case, p is an integer between 1 and 12. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to claims 6 and 7, Okada discloses the polyorganosiloxane as shown in the structural formula of paragraph [0026]. The R group comprises at least 2 hydrogens bonded to the silicon (i.e., at least 2 "o" integers as claimed). See [0027]. This, as discussed above with respect to claim 1, is considered to be substitutable with

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at least 2 alkenyl groups. Further, "m" is an integer of not less than 1, allowing at least 1 polyoxyalkylene ether (applicant's Y functional group).

With respect to claim 8, Okada specifically discloses vinyl, which the examiner believes would represent the claimed percentage under certain polymer conditions provided by Okada, while meeting the requirements of claim 6.

With respect to claims 9 and 10, Okada discloses 1,3-divinyl-1,1,3,3-tetramethyldisiloxane. See [0054]. As discussed above, the divinyl would be substitutable for hydrogen groups. This would represent the formula of claim 10 wherein p and q are 0 and the two end groups carry a hydrogen directly bonded to the silicon atom.

With respect to claims 11-14 and 16, Okada discloses the electrolyte to be LiClO_4 , LiPF_6 , LiBF_4 , and so on. See [0066].

With respect to claim 15, Okada discloses a 3.0-g portion of the polysiloxane obtained having a polyethylene oxide structure and a cyclic carbonate structure to be admixed with 3.4mmol of LiCF_3SO_3 . Okada further discloses a wide range of possible structural formulas for the polyorganosiloxane. See [0026-0027]. It is the position of the Examiner that the O/Li ratio would fall within the claimed range. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

With respect to claims 17 and 18, Okada discloses the metal cation may be manganese, iron, cobalt, nickel, copper, zinc and silver. See [0065].

With respect to claims 19 and 20, Okada discloses the electrolyte may be an organic electrolyte such as propylene carbonate, and so forth. See [0070].

With respect to claim 21, Okada discloses the hydrosilylation catalyst (C) is based on platinum-vinylsiloxane, chloroplatinic acid, $\text{Pt}(\text{COD})_2$ and the like. See [0059].

With respect to claims 22-24, Okada discloses a curable composition for a polymer electrolyte which comprises constituents (A) to (D) as an essential constituent, wherein (A) is a polysiloxane having a polyethylene oxide (polyoxyalkylene) structure-containing group on a silicon atom and having two or more SiH groups, (B) is a compound having at least one structure selected from a siloxy linkage and having two or more alkenyl groups, (C) is a hydrosilylation catalyst, and (D) is an electrolyte salt compound. See abstract. A specific example of the constituent (B) is 1,3-divinyl-1,1,3,3-tetramethyldisiloxane, which is considered a polyorganosiloxane. See [0054].

Okada does not expressly disclose the SiH groups on the **(B)** compound or the alkenyl groups on the **(A)** compound as claimed (instead disclosing the opposite). However, the purpose of the SiH and alkenyl groups is to cross-link the polymers. Therefore, one of ordinary skill in the art at the time of the invention would recognize that the SiH groups of constituent (A) and the alkenyl groups of constituent (B) are substitutable for each other and would yield the predictable results of cross-linkable polymers that would, upon cross-linking, yield the same polymer. *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. ___, 82 USPQ2d 1385 (2007).

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This polymer electrolyte is then positioned between an anode and a cathode in a battery wherein the cathode consists of lithium metal, lithium alloys, inorganic materials with lithium therein, and so forth. See [0081-0084].

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Scully whose telephone number is (571)270-5267. The examiner can normally be reached on Monday to Friday 7:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. S./

Examiner, Art Unit 1795

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/Raymond Alejandro/

Primary Examiner, Art Unit 1795